AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Currently Amended) Phosphorus-containing polymer, suitable for coating dielectric surfaces, of the general formula I or II,

$P(A)_m(F)_{n1}(U)_{o1}$ (I)

$P(A)_m(UF_{n2})_{o2}$ (II)

in which

P stands for a linear or branched, uncrosslinked ~~or crosslinked,~~ homo- or heteropolymeric polymer component, wherein the polymer component P does not represent a polyacrylate nor a polyamideacrylate

A stands for identical or different phosphorus-containing groups bonded to P,

m stands for a number from 3 to 1000,

F stands for identical or different functional groups bonded directly or indirectly to P, which are present in addition to A,

nl stands for a number from 1 to 1000,

n2 stands for a number from 1 to 100,

U stands for identical or different, linear or branched, uncrosslinked ~~or crosslinked~~ oligomeric or polymeric segments, made up of identical or different monomers, which are bonded to P,

o1 stands for a number from 0 to 1000,

o2 stands for a number from 1 to 1000.

2. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains phosphorus-containing groups A in an amount of from 0.001 to 10 mEq.

3. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains functional groups F in an amount of from 0.001 to 20 mEq.

4. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains segments U in an amount of from 0.001 to 20 mEq.

5. (Currently Amended) Polymer according to Claim 1, wherein the polymer has a Mw ~~an average molar mass~~ of from 1000 to 10,000,000 g/mol.

6. (Previously Presented) Polymer according to Claim 1, wherein the polymer component P is a statistical copolymer or block copolymer.

7. (Previously Presented) Polymer according to Claim 1, wherein the polymer component P is hydrophilic.

8. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains phosphorus-containing groups A in the form of a spacer carrying from one to six identical or different phosphorus-containing radicals.

9. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains functional groups F that can form covalent bonds, coordination bonds or take part in biochemical recognition reactions.

10. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains functional groups F with crosslinkers.

11. (Currently Amended) Polymer according to Claim 1, wherein the segments U have a ~~molar mass, or average molar mass~~ Mw, of from 100 to 10,000 g/mol.

12. (Previously Presented) Polymer according to Claim 1, wherein the groups or segments U are hydrophilic.

13. (Currently Amended) Process for preparing a polymer according to Claim 1, wherein the polymer component P is bonded to phosphorus-containing group A and optionally oligomeric or polymeric segments U comprising the step of copolymerizing

(A) a monomer containing a phosphorus-containing group A, or a plurality of identical or different monomers containing identical or different phosphorus-containing groups A

with

(B) a monomer containing a functional group F, or a plurality of identical or different monomers containing identical or different functional groups F, and

(C) optionally, a monomer containing a segment U, or a plurality of identical or different monomers containing identical or different segments U,

to form a polymer of the formula I $\underline{(P(A)_m(F)_{n1}(U)_{o1})}$,

or with

(B′) a monomer containing a unit $(UF_{n2})_{o2}$ according to formula II, or a plurality of identical or different monomers containing identical or different units of the formula $(UF_{n2})_{o2}$ according to formula II,

to form a polymer of the formula II $\underline{(P(A)_m(UF_{n2})_{o2})}$.

14. (Previously Presented) Process for preparing a polymer according to Claim 1, comprising the following steps:

(i) preparing a polymer, which forms the polymer component P and carries identical or different functional groups that are suitable as functional groups F,

(ii) reacting some of the functional groups to form identical or different phosphorus-containing groups A, and

(iii) optionally, reacting some of the functional groups to form identical or different segments U,

wherein step (iii) can be carried out after, before or together with step (ii), and wherein not all the functional groups are converted in steps (ii) and (iii), and the functional groups that are not converted in steps (ii) and (iii) form the functional groups F of the polymer.

15. (Previously Presented) Process according to Claim 14, wherein some or all of the functional groups that have not been converted in steps (ii) and (iii) are reacted with one or more identical or different crosslinkers to form functional groups F.

16. (Withdrawn) A method of using a polymer according to Claim 1, comprising the step of applying the polymer to a dielectric material so as to form a coating on the dielectric material.

17. (Withdrawn) The method of claim 16, wherein the dielectric material is a dielectric waveguide or a portion of a dielectric waveguide.

18. (Withdrawn) An optical signal transducer having a coated dielectric waveguide, wherein the coating on the dielectric waveguide consists of a polymer according to claim 1.

19. (Withdrawn) A method of using the optical signal transducer of claim 18, wherein said optical signal transducer is exposed to a fluid containing at least one chemical and/or biochemical recognition element which is then immobilized on the coating on the dielectric waveguide.

20. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains phosphorus-containing groups A in an amount of from 0.01 to 5 mEq.

21. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains phosphorus-containing groups A in an amount of from 0.1 to 3 mEq.

22. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains functional groups F in an amount of from 0.01 to 10 mEq.

23. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains functional groups F in an amount of from 0.5 to 10 mEq.

24. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains segments U in an amount of from 0.01 to 10 mEq.

25. (Previously Presented) Polymer according to Claim 1, wherein said polymer contains segments U in an amount of from 0.5 to 10 mEq.

26. (Currently Amended) Polymer according to Claim 1, wherein the polymer has <u>a Mw</u> ~~an average molar mass~~ of from 2100 to 1,000,000 g/mol.

27. (Currently Amended) Polymer according to Claim 1, wherein the polymer has a Mw ~~an average molar mass~~ of from 5000 to 500,000 g/mol.

28. (Currently Amended) Polymer according to Claim 1, wherein the polymer has a Mw ~~an average molar mass~~ of from 5000 to 300,000 g/mol.

29. (Currently Amended) Polymer according to Claim 1, wherein the polymer has a Mw ~~an average molar mass~~ of from 10,000 to 150,000 g/mol.

30. (previously presented) Process for preparing a polymer according to Claim 1, comprising the following steps:

(i) preparing a polymer, which forms the polymer component P and carries identical or different functional groups that are suitable as functional groups F, said functional groups F being selected from the group consisting of hydroxyl groups, carboxyl groups, derivatives of carboxyl groups and amine groups,

(ii) reacting some of the functional groups to form identical or different phosphorus-containing groups A, and

(iii) optionally, reacting some of the functional groups to form identical or different segments U,

wherein step (iii) can be carried out after, before or together with step (ii), and wherein not all the functional groups are converted in steps (ii) and (iii), and the functional groups that are not converted in steps (ii) and (iii) form the functional groups F of the polymer.

31. (Withdrawn) The method of claim 16, wherein the dielectric material comprises at least one material selected from the group consisting of TiO_2, Ta_2O_5, ZrO_2, HfO_2 and Al_2O_3.

32. (Withdrawn) The method of claim 16, wherein the dielectric material comprises at least one material selected from the group consisting of TiO_2 and Ta_2O_5.

33. (Withdrawn) An optical signal transducer having a coated dielectric waveguide, wherein the coating on the dielectric waveguide consists of a polymer according to claim 1 and the dielectric waveguide comprises at least one material selected from the group consisting of TiO_2, Ta_2O_5, ZrO_2, HfO_2 and Al_2O_3.- -